change from existing conditions, apparently a highly desirable result. EDGAR T. WHERRY

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THE WELLESLEY FIRE

TO THE EDITOR OF SCIENCE: The article of Professor Caroline B. Thompson entitled "The Wellesley Fire" stated that "the more important losses to physics are lantern slides, a collection of crystals, a unique collection of Nicol prisms. . . ." The lantern slides, although a useful adjunct to the apparatus, represented an inconsiderable part of the total loss. It is true that it will be difficult to duplicate the larger crystal sections and that the Nichol prisms, although by no means forming a "unique collection," were unusually good for a college of liberal arts as indeed was the entire equipment.

In a loss amounting in the aggregate to many thousands of dollars it is idle to enumerate particular items, but it may be noted that the department was especially fortunate in its equipment for the study of advanced optics and electricity. The apparatus included a commercial photometer, a large optical bench for the study of interference and diffraction effects, a Michelson interferometer, Lummer plate spectroscope, polariscopes, polarizing microscopes, Frick polarimeter, apparatus for the Zeeman effect, etc. Recently considerable time had been devoted to developing an experimental lecture course in "Electric Oscillations." To bring the equipment again to the same degree of efficiency will be the work of years. LOUISE SHERWOOD MCDOWELL

WELLESLEY COLLEGE

SCIENTIFIC BOOKS

Across Unknown South America. By HENRY SAVAGE-LANDOR. Two volumes. Boston, Little, Brown & Company. 1913. Pp. xxiii + 377 and xvi + 439, illustrated.

A map given at the end of the first volume shows that the author traveled extensively in various parts of South America, but it is not clear which part of that continent he regards as unknown. From Rio he went to S. Paulo, and thence to Araguary in western Minas by railway. From there to the city of Goyaz he traveled a much used road. From Goyaz he went westward on the road leading to Cuyabá. That road is not only much traveled and well known, but is shown on most maps of Brazil, such as Stieler's hand atlas and Baron Homem de Mello's atlases of Brazil, 1882 and 1909. There is even a telegraph line connecting the city of Goyaz with the city of Cuyabá. Francis de Castelnau made the trip in 1844, and his account of it is given in detail in the second volume of his "Expedition dans les parties centrales de l'Amérique du Sud," pages 218–282.

At Capim Branco, near Cuyabá, the author abandoned the main road and struck out across country by compass. The various disagreeable experiences off the main road were such as one would naturally expect, whether traveling in the interior of Brazil or in the interior of Pennsylvania. Little wonder that his men objected. This wandering about through the woods seems to have been regarded as exploration of an unknown region, though it is to be noted that he found farmers living there, and that the names of the streams were known to his companions.

After a few days in this "unknown" region he came out in the road leading from Rosario to Diamantino, and near the latter place took a canoe, without the necessary outfit, and descended the Arinos and Tapajos.

Here again he seems to regard the region as unknown. But the Arinos and Tapajos, in spite of their many and difficult falls and rapids, have been navigated constantly for more than a hundred and fifty years. Father Ayres de Cazal in his "Corografia Brazilica," published at Rio in 1817, says (Vol. I., p. 261) that in 1747 Captain João de Souza descended to Pará by way of Rios Arinos, Tapajos and Maranhão, and returned by way of the Madeira with canoes laden with European goods.

Dr. Mello Moraes in his "Corografia historica do Imperio do Brasil," Rio, 1859, 486, speaks of the voyage of João de Souza in 1747, but adds that Leonardo de Oliveira descended that river in August, 1742.

Joaquim Ferreira Moutinho, author of "Noticia sobre a provincia de Matto Grosso," S. Paulo, 1869, in speaking of the guaraná trade in Matto Grosso, says (p. 212) that the great consumption of this article keeps up the trips to Pará by way of the rivers Preto, Arinos, etc. This author speaks at length of the trips on the Arinos and Tapajos and gives the distances between the principal falls, and adds that the trip to Pará is made nowadays much more easily than formerly on account of the experience of the pilots and canoemen (p. 216).

Dr. Severiano da Fonseca in his "Viagem ao redor do Brasil," I., 75–79, tells of various trips up and down the Arinos and Tapajos, and gives the distances between various points.

In 1827 G. H. von Langsdorff, the well-known traveler, then Russian consul-general to Brazil, made a trip down the Arinos and Tapajos. There is a brief account of it in the "Revista do Instituto Historico do Brazil," Vol. XXXVIII., 348–349.

The writer of this review went to Diamantino in 1882 with the purpose of descending the Arinos and Tapajos to Santarem. There was a regular traffic on the river, and during his short stay at Diamantino a canoe loaded with guaraná arrived from the lower river. The voyage was not made, however, for the simple reason that the canoemen were in debt at Diamantino, and their creditors would not allow them to leave unless their debts, amounting to several thousand dollars, were paid.

If it is too much to expect that the writer of such a book should take the trouble to acquaint himself with the older literature of the subject, surely it is not unreasonable to expect him to look through the indexes of the Royal Geographical Society of London in order to find out whether the region he traversed was unknown. Volume thirty-two of the *Journal* of that society, pages 268–280, contains an account by Chandless of his trip down that river more than fifty years ago, together with his determinations of latitudes and longitudes.

Inasmuch as but little is known of the details of the geology of the region between Goyaz and Cuyabá, the reviewer was much interested at first in the lava flows, ashes, volcanoes and craters reported across Goyaz and Matto Grosso (pages 171–291). These phenomena were quite unexpected, and their mention on almost every page led to suspicion first, and later to a comparison with the notes of the trip across the same region made by Castelnau in 1844. Evidently the author mistook for volcanic phenomena the iron cemented rocks known in Brazil as *canga*. The book fairly swarms with such absurdities and half truths.

Pages 181 to 230 of volume I. are devoted to the Bororó Indians, their customs and legends. One is amazed at the great amount of material gathered by a person who knew nothing of the language. The length of his stay among them is not definitely given, but he left them before May 20 (p. 233), and as he had entered Matto Grosso May 11, it is clear that he was with the Bororós less than a week.

The trip down the Arinos and Tapajos was one long series of difficulties in passing falls and trouble with his men. On the lower Tapajos he left the river and struck out afoot through the forests, and, as one would expect, he was soon in trouble again with his men, and out of food in addition to the inconveniences naturally to be expected in such a region.

From a scientific point of view such a book is not worthy of review space. The cosmic and ethnologic theories propounded in the preface, and the evidence on almost every page of untrustworthiness of statement put it quite out of the rank of books that can be regarded as contributing to any branch of science. It is a great pity that so much energy and money should have been expended to such little purpose.

By his own confession he could not control his men, and the reader is constantly wondering how long such an expedition can hold together, and whether the author will starve to

death or get drowned or killed right away or a little later on.

That he underwent great inconveniences and sufferings goes without saying. Such a trip can not be made in a tropical country without them; but it is questionable whether readers should be bothered with his mosquitoes, his ants, his cattle ticks, and his runaway mules.

The photographs are the one redeeming feature of the book. J. C. BRANNER

A Text-book on the Teaching of Arithmetic. By A. W. STAMPER. New York, American Book Co. Pp. 1 + 284, including bibliography and index.

This book is a real contribution to pedagogy, for although its author disavows novelty in theory and completeness in scope, he has come nearer to writing a text-book in the teaching of arithmetic for beginners than has any other writer. It differs from the other excellent works on the same subject, such as those listed in the author's bibliography, in that it gives more space to instruction in the details of method and in class-room practise than to inspirational matter. It summarizes and applies the results of pedagogical research instead of dwelling upon their origin. In comparison with other books on the teaching of arithmetic, it is a manual of method rather than a reference book for the teacher's professional library.

As to its fitness for this purpose, it covers well the courses in the teaching of arithmetic given in our better normal schools. It is a well-rounded and well-balanced treatment of school. It is in general accurate as to fact, and sound in doctrine. The author has profited by his labors at Teachers College, Columbia University, particularly by his access to the great collection of original arithmetical works gathered there. These sources, supplemented by the accurate digests and classifications, and the collections of related mathematical apparatus, constitute the most significant assemblage of historical material on the subject of arithmetic to be found anywhere in the world.

But with all this the book is a chart of the beaten path. It will serve to help the laggards rather than to blaze a new trail. To some the book will seem to be written wrong end to. As it stands the order of discussion is: Origin (Chap. I.), Logic (Chap. II.), Subject Matter (Chaps. III.–VI.), Method (Chaps. VIII.–X.), Purpose (Chap. XI.). But among these topics why should not the last be first? The author makes aim or purpose the first consideration in his typical method lessons, and states (pp. 248–249) the controlling aim in the teaching of arithmetic. If the discussion of the selection, presentation and study of subject matter had been controlled from the start by the real *purpose*, it would not have greatly modified the conclusions of this volume. But it would have thrown a flood of light on why we are told to teach or not to teach certain things, and why we are told to teach in a prescribed way. The subject, if approached from this stand-point, would necessitate discussing, to a greater extent than the author does, the attitude of the pupil, who, after all, is the first consideration, the chief beneficiary and the sole legatee in the teaching of arithmetic.

The following more specific references may be of value: Pp. 9–18: A pragmatic treatment such as indicated above would relegate these meager nine pages of history to subordinate notes under related topics in later chapters. P. 18, questions 5 and 6, are of little value. P. 20: The *working* definitions explained at the bottom of the page should be emphasized as the kind of most value in arithmetic. P. 29: It would help the teacher, if the author had admitted that counting is measuring in the broadest sense. P. 30: the last paragraph could be strengthened thus: To the statement, "The multiplicand and the product being concrete," add "and of the same kind." Also to the statement, "The dividend is always concrete," should be added, "if either of the other terms are." P. 43: Young teachers may be led to overvalue work in artificial scales. P. 44: The expression, "When the first nine," would better be "when the column at the left." P. 51: The teaching of casting out nines is of doubtful value as a pratical check required in the universal course of study. P. 58: Re-